

**AMENDMENTS TO THE CLAIMS**

1. (Cancelled)

2. (Currently Amended) A biochip cartridge according to claim 6, 24 or 264 wherein said capture binding ligands are capture probescomprise nucleic acids.

3. (Currently Amended ) A biochip cartridge according to claim 6, 24 or 264 wherein said reaction chamber further comprises a gasket to retain fluid in contact with said array.

4. (Cancelled)

5. (Currently Amended) A biochip cartridge according to claim 6, 24, or 264 wherein said reaction chamber further comprises an outlet port.

6. (Currently Amended) A biochip cartridge according to claim 1comprising:

a) a reaction chamber wherein said reaction chamber is configured to minimize the introduction or retention of air bubbles upon introduction of a sample; said chamber comprising:

i) a substrate comprising an array of electrodes, each comprising:

A) a self-assembled monolayer; and

B) a capture binding ligand;

ii) an inlet port for the introduction of reagents; and

b) interconnects to allow the electrical connection of said electrodes to a processor.

7. (Currently Amended) A biochip cartridge according to claim 6, 24, or 264 wherein said array is on one surface of said substrate.

8. (Currently Amended) A biochip cartridge according to claim 6, 24, or 264 wherein two surfaces of said substrate each comprise an array.

9. (Currently Amended ) A biochip cartridge according to claim 6, 24, or 264 further comprising a cap comprising at least one storage well comprising assay reagents.

Claims 10-23. Cancelled.

24. (New) A biochip cartridge comprising:

a) a reaction chamber comprising:

i) a substrate comprising a printed circuit board comprising an array of electrodes, each

electrode comprising:

- A) a self-assembled monolayer; and
  - B) a capture binding ligand;
- ii) an inlet port for the introduction of reagents; and
- b) interconnects to allow the electrical connection of said electrodes to a processor.

25. (New) A biochip cartridge according to claim 6 or 24, wherein said inlet port comprises a valve comprising a semipermeable membrane.

26. (New) A biochip cartridge comprising:

- a) a reaction chamber comprising:
  - i) a substrate comprising an array of electrodes, each electrode comprising:
    - A) a self-assembled monolayer; and
    - B) a capture binding ligand;
  - ii) an inlet port for the introduction of reagents, said inlet port comprising a valve including a semipermeable membrane; and
- b) interconnects to allow the electrical connection of said electrodes to a processor.

27. (New) A biochip cartridge according to claim 26, wherein said semipermeable membrane preferentially allows the escape of gas and retains sample fluid.

28. (New) A biochip cartridge according to claim 26, wherein said semipermeable membrane comprises porous teflon.

29. (New) A biochip cartridge according to claim 26, wherein said semipermeable membrane comprises Gortex™.

30. (New) A biochip cartridge according to claim 6 or 26 wherein said substrate comprises a printed circuit board.

31. (New) A biochip cartridge according to claim 6, 24, or 26, wherein said capture binding ligands comprise proteins.